THE HANFORD SITE

242-A Evaporator

Fact Sheet – May 2021

The 242-A Evaporator is a vital facility for tank space management, supporting both the Direct-Feed Low-Activity Waste process and tank waste retrieval.

The U.S. Department of Energy and contractor Washington River Protection Solutions are safely and compliantly operating and upgrading the 242-A Evaporator Facility, supporting tank waste volume management at the Hanford Site in southeastern Washington state.

Background

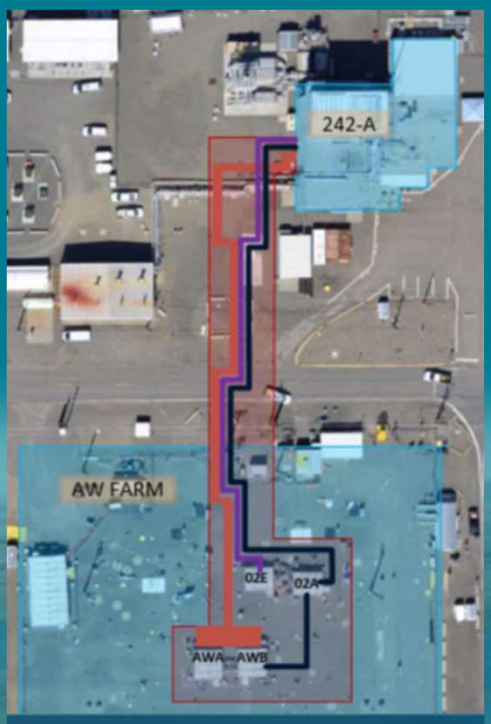
The 242-A Evaporator is centrally located in the Hanford Site's 200 East Area. Since its construction in 1977, the evaporator has removed more than 81 million gallons of liquid from Hanford's tank waste. The evaporator boils liquid tank waste to evaporate water to reduce the volume of waste stored in Hanford's underground tanks. Waste volume reduction is also critical for single-shell tank (SST) waste retrievals to double-shell tanks (DST). In order to meet cleanup milestones, DST space availability is a key factor in continuing SST retrievals. The evaporator is currently shut down for facility upgrades to prepare for future waste volume reduction campaigns.

Mission

The mission is to support SST retrieval operations and achieve waste volume reduction to maximize DST space availability through the evaporation of water from liquid tank waste.

The 242-A Evaporator is monitored closely by the operations staff in the Evaporator Control Room.

242-A Evaporator at night.



Replacement slurry and feed transfer lines for the 242-A Evaporator.

242-A Evaporator (cont.)

Hazards

The 242-A Evaporator is a Hazard Category 2 nuclear facility. In operations mode the facility concentrates radioactive and hazardous waste. Exposure to radiation, hazardous materials and standard industrial hazards is the primary risk to facility workers from normal operations. The 43-year-old facility must be maintained to support waste volume reduction operations.

Safety and Efficiency

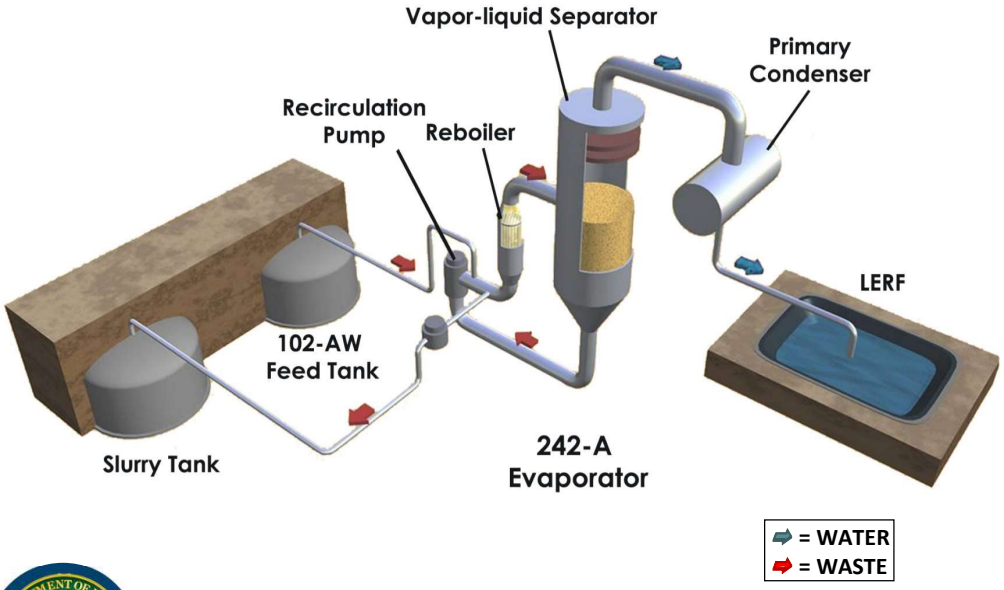
Hanford has a long history of operating the waste-reduction campaigns safely and efficiently at the 242-A Evaporator. and operational hazards are mitigated though safety management programs like safety and health and waste management programs. The labor force is highly trained in the functions and safeguards that are in place to ensure safe and compliant operations.

Progress

- Since fiscal year 2014 the 242-A Evaporator has created nearly three million gallons of high-level waste storage space (waste volume reduction) – the equivalent of nearly three DSTs.
- Currently not in the waste volume reduction operating mode (resuming in fiscal year 2022).
- Transfer line replacement and facility modifications are currently in the design and procurement stages (completion in fiscal year 2022).

Future

With the completion of the transfer line replacement project and various facility upgrades (fiscal year 2022), the evaporator will continue to play a critical role in waste volume management for the Hanford Site for decades to come.



- The 242-A Evaporator has operated since 1977, reducing the volume of waste stored in DSTs and making room for waste retrieved from SSTs. Liquid waste is pumped to the evaporator from a nearby DST.
- Waste is heated in a sealed vessel under partial vacuum to boil the waste at 125 degrees Fahrenheit, nearly 90 degrees lower than at normal atmospheric pressure. Water evaporated from the waste is captured, filtered and sent to a nearby facility for disposal.
- The 242-A Evaporator has removed more than 80 million gallons of water from Hanford's tank waste, maximizing DST storage space.